

## REMARKS

Claims 17-24, 26-30, 32, 44-46, 48, 49, 54, 60-62, and 68-70 are pending in the application. Claims 17-24, 26-30, 32, 44-46, 48, 49, 54, 60-62, and 68-70 stand rejected under 35 U.S.C. § 112, ¶ 2 as indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant regards as the invention. Claims 17-24, 26-30, 32, 44-46, 48, 49, 54, 60-62, and 68-70 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Claims 17, 18, 20, 26, 44, 45, 60, 61, and 68-70 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0065546 to Gorur et al. in view of “Design and Performance of a General-Purpose Software Cache” by Iyengar (hereinafter “Iyengar”). Claims 19, 21-24, 27-30, 32, 46, 48, and 49 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0065546 to Gorur et al. in view of Iyengar and U.S. Patent Application Publication No. 2002/0091539 to Yin et al. Claims 54 and 62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0065546 to Gorur et al. in view of Iyengar, U.S. Patent Application Publication No. 2002/0091539 to Yin et al., and “Pi: A New Approach to Flexibility in System Software” to Kulkarni (hereinafter “Kulkarni”).

Reconsideration is requested. The rejections are traversed. No new matter is added. Claims 17 and 44 are amended. Claims 17-24, 26-30, 32, 44-46, 48, 49, 54, 60-62, and 68-70 remain in the case for consideration.

## CLAIM REJECTIONS - 35 U.S.C. § 112

Claims 17-24, 26-30, 32, 44-46, 48, 49, 54, 60-62, and 68-70 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Applicant believes the amendments to claims 17 and 44 address these rejections. Support for these amendments can be found in the specification at page 9, lines 10-11 and 31-32. The Applicant believes that claims 17-24, 26-30, 32, 44-46, 48, 49, 54, 60-62, and 68-70 are now patentable under 35 U.S.C. § 112, second paragraph.

The Applicant would also like to clarify that the phrase “at least” recited in claim 17, line 12, is meant to modify both “the contract object and the second object”. Therefore, there is a proper antecedent basis in claim 17, line 12.

#### CLAIM REJECTIONS - 35 U.S.C. § 101

Claims 17-24, 26-30, 32, 44-46, 48, 49, 54, 60-62, and 68-70 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

Claim 17 is amended to recite “A computer-implemented method for using a contract object to coordinate relationships between multiple objects, comprising: ... recording an entry in a transaction log, the entry representing that the contract object is created to relate the first object and the second object; and removing the entry from the transaction log after the contract object is created.” Claim 44 includes similar features. Support for this amendment can be found in the specification at page 1, lines 9-10, and page 9, lines 10-11 and 31-32.

The Examiner acknowledges that the intermediate step of “updating ... the contract object” produces a useful, concrete, and tangible result (*see* Office Action dated March 26, 2007, page 3, paragraph 9). But the Examiner alleges that the features of recording and removal of an entry does not produce any useful, concrete, and tangible result (*see* Office Action dated March 26, 2007, page 3, paragraph 9). The Examiner argues that the claimed invention as a whole does not produce a “useful, concrete, and tangible result”, citing *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F.3d 1368, 47 U.S.P.Q.2d 1596 (Fed. Cir. 1998) (*see* Office Action dated March 26, 2007, page 3, paragraph 9). The Applicant respectfully disagrees for the reasons that follow.

According to *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, the claimed invention must produce a “useful, concrete, and tangible result.” Claims 17 and 44 have been amended to describe the claims as creating a contract object and using the contract object to coordinate relationships between multiple objects. The Applicant asserts that such amendment should make the claims allowable, as they produce a useful, concrete, and tangible, and concrete result: namely, a contract object is created to coordinate relationships between multiple objects, resulting in an automatic update to one object when an event occurs to another object.

### *Useful*

According to the Interim Guidelines for subject matter eligibility, published on November 22, 2005, “[f]or an invention to be “useful” it must satisfy the utility requirement of section 101” (*see* Interim Guidelines, page 20). A contract object is created to provide associations between multiple objects for many applications, such as file systems, relational databases, and spreadsheets. For example, one object (the “referencing” object) may reference another object (the “referenced” object) stored elsewhere in the software environment. If the “referenced” object is changed, e.g., deleted, moved, the “referencing” object might need to change, too. But often there is no way to determine what “referencing” objects might be affected by the changes to the “referenced” object. The contract object is useful to provide associations between multiple objects, such that when a first event (e.g., deleted or moved) occurs to a first object, a second object may access the contract object to effect any corresponding changes according to the first event.

### *Tangible*

According to the Interim Guidelines for subject matter eligibility, published on November 22, 2005, the requirement that the result be “tangible” means that “the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result. . . . In other words, the opposite meaning of ‘tangible’ is ‘abstract’” (*see* Interim Guidelines, pages 21-22). The Applicant believes that the use of a contract object produces a “real-world result”. That is, the contract object is created to relate multiple objects, such that when a first event (e.g., deleted or moved) occurs to a first object, a second object may access the contract object to effect any corresponding changes according to the first event.

### *Concrete*

According to the Interim Guidelines for subject matter eligibility, published on November 22, 2005, the requirement that the result be “concrete” means that “the process must have a result that can be substantially repeatable or the process must substantially produce the same result again. . . . The opposite of ‘concrete’ is unrepeatable or unpredictable” (*see* Interim Guidelines, page 22). The Applicant asserts that this requirement is met: the creation of a contract object to relate a first object and a second object results in an automatic update to the second object when a first event occurs to the first object.

Because the claimed invention produces “a useful, tangible, and concrete” result as defined in the Interim Guidelines for subject matter eligibility, published on November 22, 2005, as well as in *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, the Applicant believes that claims 17 and 44, and their respective dependent claims, are patentable under 35 U.S.C. § 101.

#### CLAIM REJECTIONS - 35 U.S.C. § 103(a)

Claims 17, 18, 20, 26, 44, 45, 60, 61, and 68-70 stand rejected as being obvious over Gorur in view of Iyengar. The Applicant respectfully disagrees for the reasons that follow.

Claim 17 recites “removing the entry from the transaction log after the contract object is created” (*see* specification, page 9, lines 31-32). Claim 44 recites similar features.

The Examiner acknowledges that Gorur does not disclose removing the entry from the transaction log (*see* Office Action dated March 26, 2007, page 6, paragraph 15). The Examiner, however, alleges that Iyengar discloses the removal feature as recited in claim 17, citing Page 333, Column 2, Section 2.3.

But Iyengar does not disclose removing an entry from a transaction log. Iyengar instead discloses recording cache transactions in a log file (*see* Iyengar, page 329, column 2, fifth paragraphs from top of the page). The “cache transactions” mentioned by Iyengar refer to any invocation of a cached API function by an application program, such as Web servers and data bases (*see* Iyengar, page 329, column 2, fifth paragraphs from top of the page, and Abstract). Specifically, Iyengar discloses writing cache transaction records using the standard C library call *fwrite*. Each cache transaction record may be flushed to a disk as soon as the cache transaction record is generated, to prevent the transaction records from being lost if the cache process fails. An alternative approach is to accumulate several transaction records in a buffer before flushing the buffer to disk. This latter approach incurs lower overhead than the former, but has the disadvantage of losing those transaction records that have not yet been flushed to the disk (*see* Iyengar, page 333, column 2, section 2.3). In other words, Iyengar records cache transactions in a log file stored in a disk by writing and flushing to the disk the cache transactions. Iyengar discloses only recording the transactions in a transaction log; Iyengar does not teach removing any transaction record from the transaction log as recited in claim 17.

The Examiner further alleges that one of ordinary skill in the art at the time of the invention would have been motivated by Iyengar to reduce overhead costs related to software objects of Gorur (*see* Office Action dated March 26, 2007, page 4, paragraph 13). But the suggested motivation by the Examiner teaches away from the claimed invention, as discussed below.

The claimed invention uses a transaction log to enable the rebuilding of a file system in case the file system is damaged before it reaches a stable state. An entry may be removed from the transaction log after the corresponding object manipulation is finished, and the file system is in a stable state. For example, as illustrated in FIG. 6, “[i]f transaction log 605 is used to rebuild file system 335, then when file system 335 begins to recover from the failure, file system 335 may access transaction log 605 and determine which transactions were underway when the failure occurred. Entry 620 can be used to retry creating contract 215, completing the relationship between file 115 and collection 205. Once contract 215 is established, entry 620 can be removed from transaction log 605, as there is no need to recreate contract 215. If entry 620 were the only entry in transaction log 605, then file system 335 would know that file system is fully restored after entry 620 is removed, and normal file system operations may commence” (*see* specification, page 9, lines 27-33).

In other words, an entry may be removed from the transaction log after the corresponding object manipulation is completed, to indicate that the corresponding object has been recreated in the file system. Once all the entries are removed from the transaction log, the file system has been fully restored, and normal file system operations may commence. Put yet another way, the claimed invention removes an entry from the transaction log to indicate when that transaction has been completed and the file system may have been restored, so that normal file system operations may commence in case of file system failures. This is in contrast to the alleged motivation relied upon by the Examiner, which is to reduce overhead costs related to software objects of Gorur. If, as the Examiner suggests, a goal is to reduce overhead costs, maintaining a transaction log does not achieve this goal. Transaction logs are expensive to maintain, and are rarely needed. The cost of maintaining a transaction log would increase, rather than reduce, overhead costs.

Claim 32 recites “A computer-implemented method according to claim 17, further comprising using the entry to reconstruct the contract object after the contract object is lost.”

The Examiner alleges that it is obvious to use Gorur's persistent log to reconstruct a contract object to overcome the shortcoming of the prior systems as described by Yin and Iyengar by reducing overhead cost (*see* Office Action, page 10, paragraph 28).

But Gorur's persistent log dialog 240 is "a persistent message forum that allows users to communicate information about the contract to increase understanding of the focus and context of the contract or to negotiate details of the contract. In various example, the dialog can be used to (1) negotiate the terms of a contract, (2) communicate the details and expectations of an assignment, or (3) coordinate efforts of an activity (*see* Gorur, Page 5, [0073])." Gorur's dialog 240 includes Entry Person, Date Time, and Message attributes. The Entry Person attribute identifies the name of the person that entered text into the dialog; the Date Time attribute identifies the date and time text was entered into the dialog; and the Message attribute includes the text message that was entered into the dialog (*see* Gorur, page 5, ¶ 74). In other words, Gorur's persistent log is not used to reconstruct a contract object after the contract object is lost as in claim 32, but rather used as a communication forum to negotiate details of a contract. Nowhere has Gorur, Yin, or Iyengar disclosed using a log to reconstruct a contract object after the contract object is lost.

Furthermore, the suggested motivation by the Examiner teaches away from the claimed invention. The claimed invention uses a transaction log to enable the rebuilding of a file system in case the file system is damaged before it reaches a stable state. If, as the Examiner suggests, a goal is to reduce overhead costs, maintaining a transaction log does not achieve this goal. Transaction logs are expensive to maintain, and are rarely needed. The cost of maintaining a transaction log would increase, rather than reduce, overhead costs.

As the combination of Gorur and Iyengar does not all the elements in claims 17, 18, 20, 26, 44, 45, 60, 61, and 68-70, claims 17, 18, 20, 26, 44, 45, 60, 61, and 68-70 are patentable under 35 U.S.C. § 103(a) over Gorur in view of Iyengar. Claims 17, 18, 20, 26, 44, 45, 60, 61, and 68-70 are allowable.

Claims 19, 21-24, 27-30, 32, 46, 48, and 49 stand rejected under 35 U.S.C. § 103(a) as being obvious over Gorur and Iyengar, and further in view of Yin. The Applicant respectfully disagrees for the reasons that follow.

Yin discloses a centralized contract management system which automatically and continuously manages orders and contracts among trading partners. Yin's system knows all the

relevant upstream and down stream contracts for both contracting parties, as well as all the business rules, such that the system notifies and/or reminds the trading partners of critical events and activities. Specifically, Yin discloses the system uses a hub and spoke architecture where all contract information between trading partners is stored at the hub and all orders between the trading partners go through the same hub (*see* Yin, page 5, ¶¶ 74, 75, 79, and FIG. 1).

As for claims 22-23, 28-30, and 48-49, the Examiner alleges that Yin describes a contract object comprising locators and identifiers, citing FIG.9, Contract class, ProviderAccountId, ConsumerAccountId, and ParentContractId (*see* Office Action, page 9, paragraph 25). But Yin's locators and identifiers, such as ProviderAccountId, ConsumerAccountId, and ContractId, are not stored in the contract object or the first/second objects (i.e., trading partners) as established in the claims. Instead, Yin's locators and identifiers are stored in the database 370 in the hub component 106 of system 300 (*see* Yin, page 6, ¶ 91, page 8, ¶ 138, and FIG. 3]). Yin's hub is a central information processing system to manage orders and contracts among trading partners, rather than a contract object or the first/second objects (*see* Yin, page 5, ¶ 79, and FIG. 1).

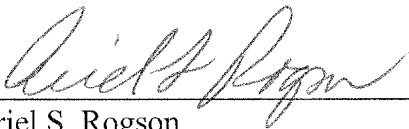
Furthermore for the reasons discussed above, the suggested motivation by the Examiner-reducing overhead costs described by Iyengar, teaches away from the claimed invention. The claimed invention uses a contract object to coordinate relationships between multiple objects, resulting in an automatic update to one object when an event occurs to another object. The claimed invention also uses a transaction log to enable the rebuilding of a file system in case the file system is damaged before it reaches a stable state. The claimed invention does not concern about reducing overhead costs. If, as the Examiner suggests, a goal is to reduce overhead costs, maintaining a transaction log does not achieve this goal. Transaction logs are expensive to maintain, and are rarely needed. The cost of maintaining a transaction log would increase, rather than reduce, overhead costs.

Claims 54 and 62 stand rejected under 35 U.S.C. § 103(a) as being obvious over Gorur in view of Iyengar and Yin, and further in view of Kulkarni. These rejections are respectfully traversed for the reasons given above for the patentability of the independent claims 17 and 44.

For the foregoing reasons, reconsideration and allowance of claims 17-24, 26-30, 32, 44-46, 48, 49, 54, 60-62, and 68-70 of the application as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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